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Occurrence of a New Hermit Crab of the Genus *Porcellanopagurus* in the Sea of Japan

By

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武田正倫*: カイガラカツギ属ヤドカリの1新種

During the faunal study of decapod crustaceans from the Sea of Japan, a male hermit crab of the peculiar genus *Porcellanopagurus* FILHOL was found among the specimens obtained by the R/V *Tansei-Maru* of the Ocean Research Institute, University of Tokyo. The hermit crabs of the genus are, as mentioned by TAKEDA (1981), known by the unusual habit of carrying a broken piece of bivalve shell on the back fitting the small abdomen to inside depression of the shell. The genus is represented by five species, viz., *P. edwardsi* FILHOL, 1885, from New Zealand; *P. tridentatus* WHITELEGGE, 1900, from eastern Australia; *P. platei* LENZ, 1902, from the Juan Fernandez Islands; *P. japonicus* BALSS, 1913, from Japanese waters; *P. truncatifrons* TAKEDA, 1981, from the Ogasawara Islands. The specimen at hand is the closest to the Ogasawara Islands species in the general formation of the carapace and uropods, but as noted below, distinguished from the known species mainly by the different shape of the front and shield.

The specimen, which is now preserved in the National Science Museum, Tokyo (NSMT), was brought to me through the kindness of Prof. Chitaru OGURO of Toyama University. My cordial thanks are extended to Prof. OGURO.

Family Paguridae

Genus *Porcellanopagurus* FILHOL, 1885***Porcellanopagurus nihonkaiensis* sp. nov.**

(Fig. 1B)

Type specimen. Holotype, ♀ (NSMT-Cr 9137. Length of shield with rostrum, 3.8 mm, greatest breadth of shield with lateral teeth, 4.7 mm); Iida Bay, east of Noto Penin., TK75-6 cruise, sta. 15 (37° 22.1' N, 137° 16.8' E, 36 m deep, sandy mud bottom), by grab; June 3, 1975.

Description of holotype. Shield apparently broader than long, widening posteriorly;

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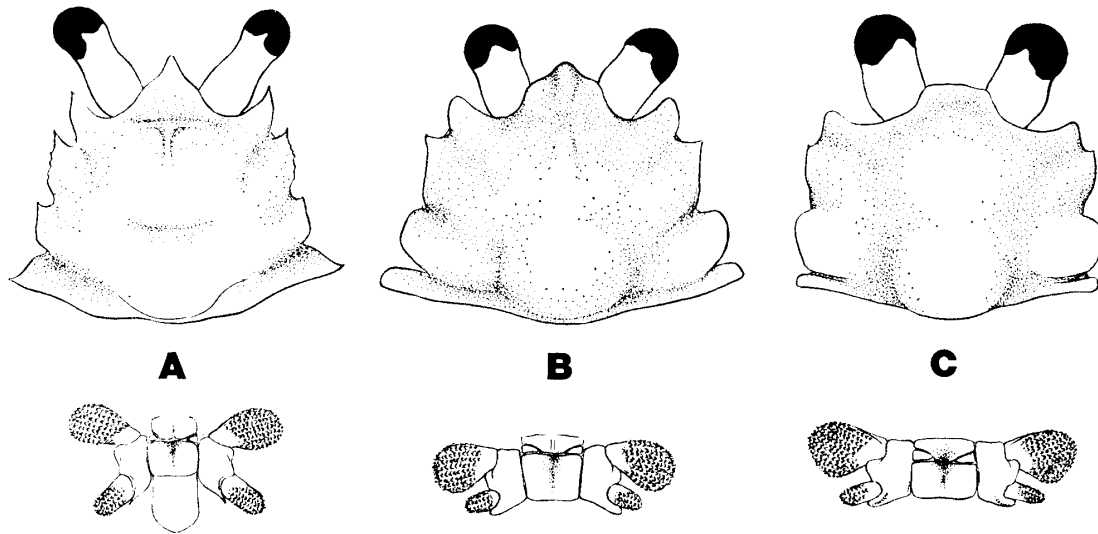


Fig. 1. Shields and uropods of three Japanese species of *Porcellanopagurus*.
 A: *P. japonicus* BALSS (♂ from off Izu Is., 5.0 mm in length and 5.8 mm in breadth).
 B: *P. nihonkaiensis* sp. nov. (holotype, ♀ from east of Noto Penin., 3.8 mm in length and 4.7 mm in breadth). C: *P. truncatifrons* TAKEDA (holotype, ovig. ♀ from Ogasawara Is., 2.6 mm in length and 3.3 mm in breadth).

surface areolated with wide, shallow furrows, and sparsely covered with scattered tufts or short rows of hairs. Rostrum prominent and produced at its middle to be an obtuse triangular lobe. Supraorbital border deeply excavated for its most length; distance between its inner angle and external orbital tooth nearly equal to breadth of the front, and slightly less than the greatest breadth of carapace (distance between last lateral teeth of both sides); external orbital tooth stout, with its outer border markedly rounded. First lateral tooth of shield deeply separated from external orbital tooth, and in dorsal view, subhepatic part is seen in the deep bight; outer border of first tooth almost longitudinal or weakly sinuate, being armed with a spinule at its anterior end; second tooth strong, oblique and much protruded beyond first tooth, its border being crested; third tooth transverse, further protruded beyond second tooth and subtruncated at its apex.

Eyestalk stout, short and only weakly constricted near cornea. Basal segment of antenna armed with a spinule on its outer distal angle, and its inner angle developed forward as a lobe to grasp the inner margin of second segment; antennal acicula of second segment subequal or slightly longer than second segment, being provided with two or three stiff setae at its apex.

Chelipeds heavy and very unequal; in right (larger) cheliped, upper surface of carpus furnished with several transverse rugae, but upper surface of palm quite smooth and shining; inner margins of carpus and palm thick for their whole lengths. In left (smaller) cheliped, both margins of carpus thick and upper median part of carpus ridged longitudinally; palm slender and about a third as high as larger palm.

Ambulatory legs long; lower margin of merus bicarinate, and upper margin of carpus with a longitudinal ridge; lower border of propodus with five equidistant horny spines, and that of dactylus with seven. Fourth pair of legs are missing. Fifth pair chelate as

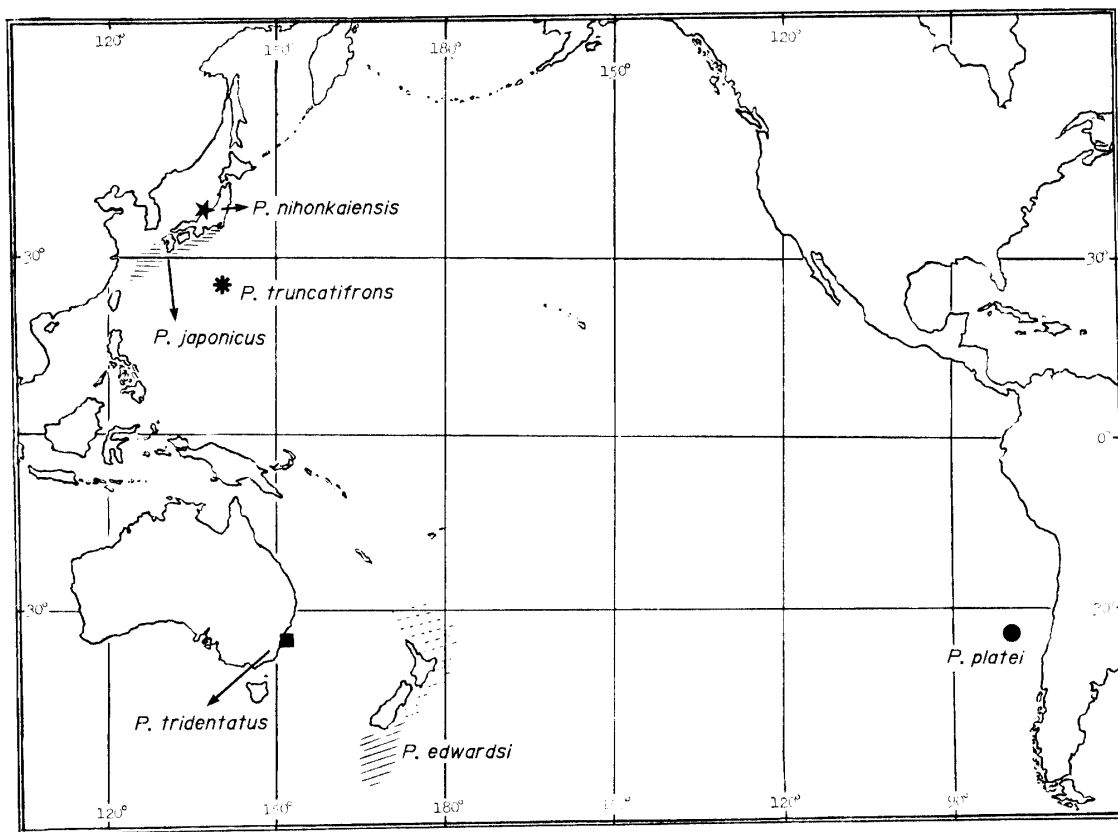


Fig. 2. A map showing the geographical distribution of the known species of *Porcellanopagurus*.

usual. Uropod as figured.

Etymology. "Nihonkai" means the Sea of Japan in Japanese.

Remarks. As mentioned elsewhere, the genus *Porcellanopagurus* is composed of five Pacific species, *P. edwardsi* FILHOL from New Zealand, *P. tridentatus* WHITELEGGE from New South Wales, Australia, *P. platei* LENZ from the Juan Fernandez Islands, *P. japonicus* from Japanese waters and *P. truncatifrons* TAKEDA from the Ogasawara Islands. The Chilean species is really close to the New Zealand species and its validity is not always distinct as discussed by BALSS (1930), BENNETT (1932) and FOREST (1951). These species are so small and rare that the records of occurrence are few. Apart from the original descriptions, the recent contributions to *Porcellanopagurus* are only those of FOREST (1951) on *P. edwardsi* and MIYAKE (1978) on *P. japonicus*. The occurrence of the new species in the Sea of Japan is outstandingly interesting from the biogeographical viewpoint.

At this chance, I reexamined the holotype of *P. truncatifrons*, and also five males and four females from submarine banks off the Izu Islands identified with *P. japonicus*. It is definitely said that the original figures of both species are excellent and offer the good clues for the subsequent identification.

The new species is the closest congener of *P. truncatifrons*, but distinguished from it by the subacute front (entirely truncated in *P. truncatifrons*), the deeply concave and narrow supraorbital border (very shallow and much wider than the front in *P. truncatifrons*), the

pentagonal shield, with the lateral borders widening posteriorly (almost rectangular, with the longitudinal lateral borders in *P. truncatifrons*). Although the last lateral tooth is apparently beyond the preceding tooth in the new species and extending just to level of the preceding tooth in *P. truncatifrons*, it is not certain whether the difference is due to the developmental variation or not as shown in *P. edwardsi* by FOREST (1951).

The shield of the new species may be somewhat similar to that of *P. edwardsi*, having the thick lateral teeth. In this New Zealand species, the rostrum is more sharply developed, and the ambulatory legs are stout, with scaly sculpture.

要 約

東京大学海洋研究所所属の調査船「淡青丸」によって (TK75-6 次航海), 富山湾と付近海域から採集された甲殻類資料中に, ホンヤドカリ科カイガラカツギ属 *Porcellanopagurus* のヤドカリ 1 個体が見出された。採集地点は能登半島東側の飯田湾, 水深 36 m である。この属には従来 5 種 (ニュージーランド南方海域に分布する *P. edwardsi* FILHOL, オーストラリア東南部産の *P. tridentatus* WHITELEGGE, チリー沖フェンフェルナンデス諸島産の *P. platei* LENZ, 相模湾から東支那海にかけて分布するカイガラカツギ *P. japonicus* BALSS, 小笠原諸島産のチビカイガラカツギ *P. truncatifrons* TAKEDA) が知られている。これらはヤドカリとはいえ, その和名が示すように, 巻貝を利用することはなく, 二枚貝の半片や破片を背負うという特異な習性をもっている。腹部は短小で, 尾節および尾肢は左右相称である。

飯田湾産の標本はいわゆるカイガラカツギよりもチビカイガラカツギに近い。しかし, 額が発達し (チビカイガラカツギでは完全に切断された状態), 眼窩上縁が深くくぼみ, 額の幅と等長 (ごく浅く, 額の幅より明らかに広い), 側縁が後方にくため甲の輪郭は五角形に近い (後縁がほぼまっすぐであるため輪郭は横長の四角形)。甲の側縁最後歯は横に著しく突出しているのに対し, チビカイガラカツギではほとんど突出していないが, これが種の特徴といえるかどうか現在は断定できない。結果として, 飯田湾の個体はチビカイガラカツギに近縁の別種と考えられ, *P. nihonkaiensis* という学名を与えた。

References

- BALSS, H., 1913. Ostasiatische Decapoden. 1. Die Galatheiden und Paguriden. *Abh. math.-phys. Kl., K. Bayer. Akad. Wiss.*, 2 (Suppl. 9): i-iv, 1-85, pls. 1-2.
- BALSS, H., 1930. Zoologische Ergebnisse der Reisen von Dr. L. KOHL-LARSEN nach den subantarktischen Inseln bei Neuseeland und nach Südgeorgien. 3. Die Dekapoden (Crustaceen). *Senckenbergiana*, 12: 195-210.
- BENNETT, E.W., 1932. Porcellanids and *Porcellanopagurus* from New Zealand. *Rec. Canterbury Mus.*, 3: 469-481, pl. 60.
- FOREST, J., 1951. Contribution à l'étude du genre *Porcellanopagurus* FILHOL (Paguridae). I. Description de *P. edwardsi* FILHOL. II. Remarques systématiques et biologiques. *Bull. Mus. natn. Hist. nat., Paris*, (2), 23: 82-90, 181-186.
- LENZ, H., 1902. Die Crustaceen der Sammlung PLATE (Decapoda und Stomatopoda). *Zool. Jahrb., Syst.*, Suppl. 5: 731-772, pl. 23.
- MIYAKE, S., 1978. The Crustacean Anomura of Sagami Bay. ix+161 pp., 4 pls. Biol. Lab., Imperial Household, Tokyo.
- TAKEDA, M., 1981. A new hermit crab of the genus *Porcellanopagurus* from the Ogasawara Islands. *Bull. biogeogr. Soc. Jap.*, 36: 8-13.
- WHITELEGGE, T., 1900. Scientific results of the trawling expedition of H.M.C.S. "Thetis," off the coast of New South Wales, in February and March, 1898. Crustacea. Part 1. *Mem. Austr. Mus.*, 4: 135-199, pls. 32-35.